

USING ACOUSTIC TAGS FOR MONITORING FINE SCALE 3-DIMENSIONAL MOVEMENT OF ADULT CHINOOK AT THE BALLARD LOCKS

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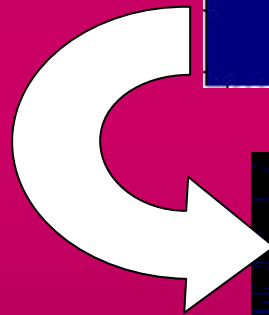
Hydroacoustic Technology, Inc.

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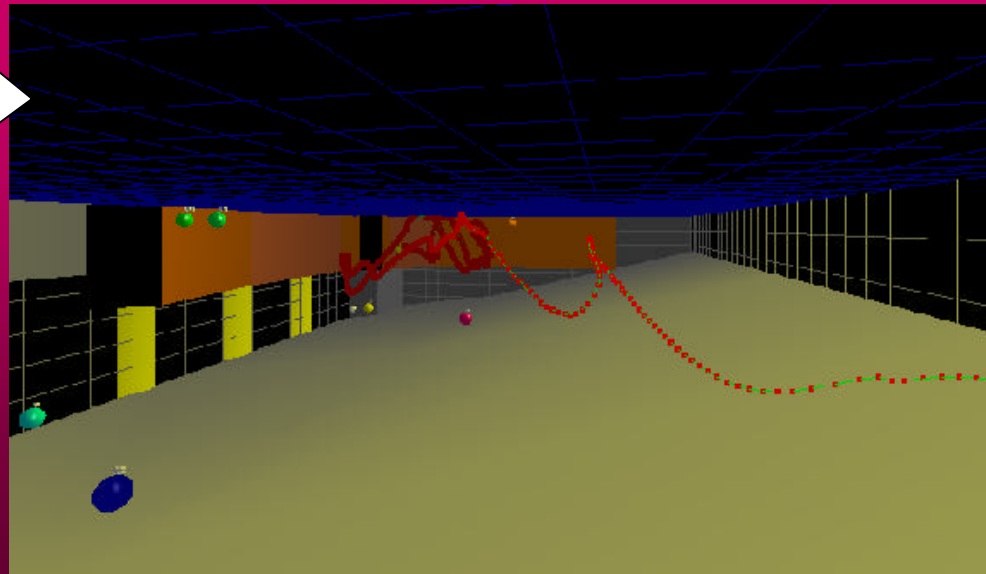
Seattle, WA 98178

Why Acoustic Tags?

Available:
Census type data

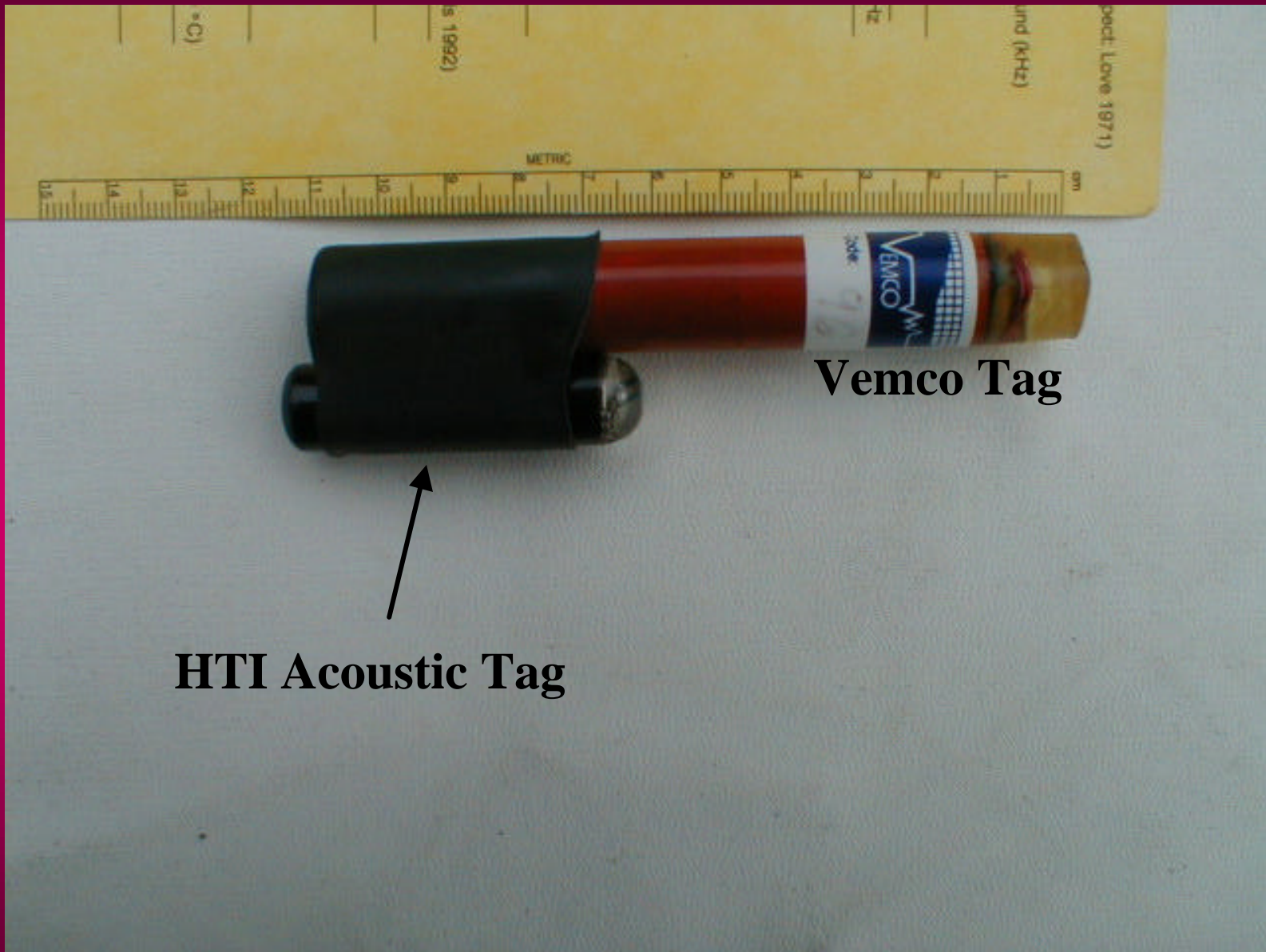


Need:
Behavioral type data



Ballard Locks 2000 Project Goals:

1. To determine if Acoustic Tag technology could be applied to adult salmon in a brackish water environment
2. To assess the viability of long life Acoustic Tags (75 day life)
3. To tag and track up to 40 fish simultaneously.
4. To continuously track individual fish as they reside in the study area.
5. To determine patterns of behavior with respect to lock operations and water quality

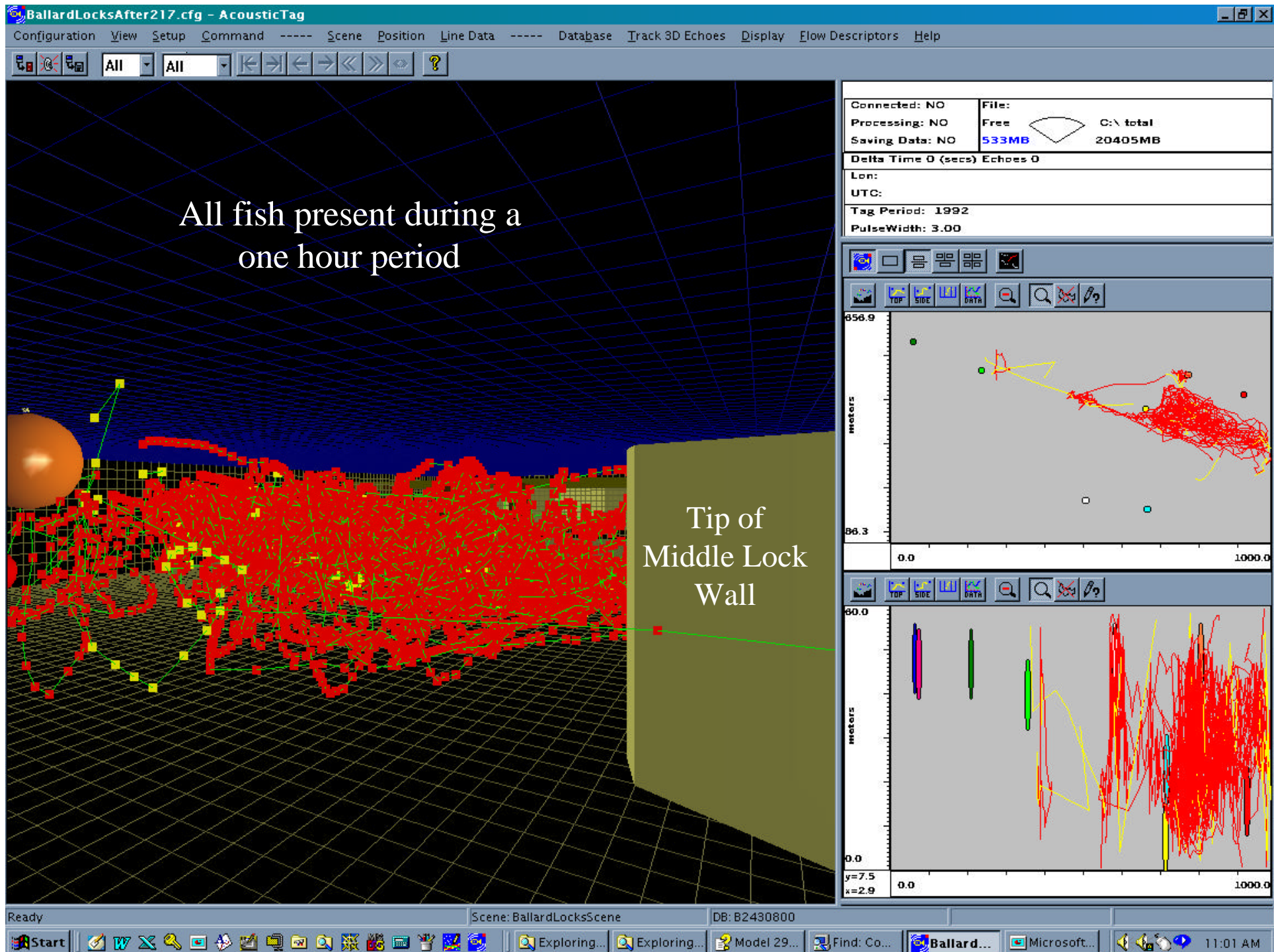


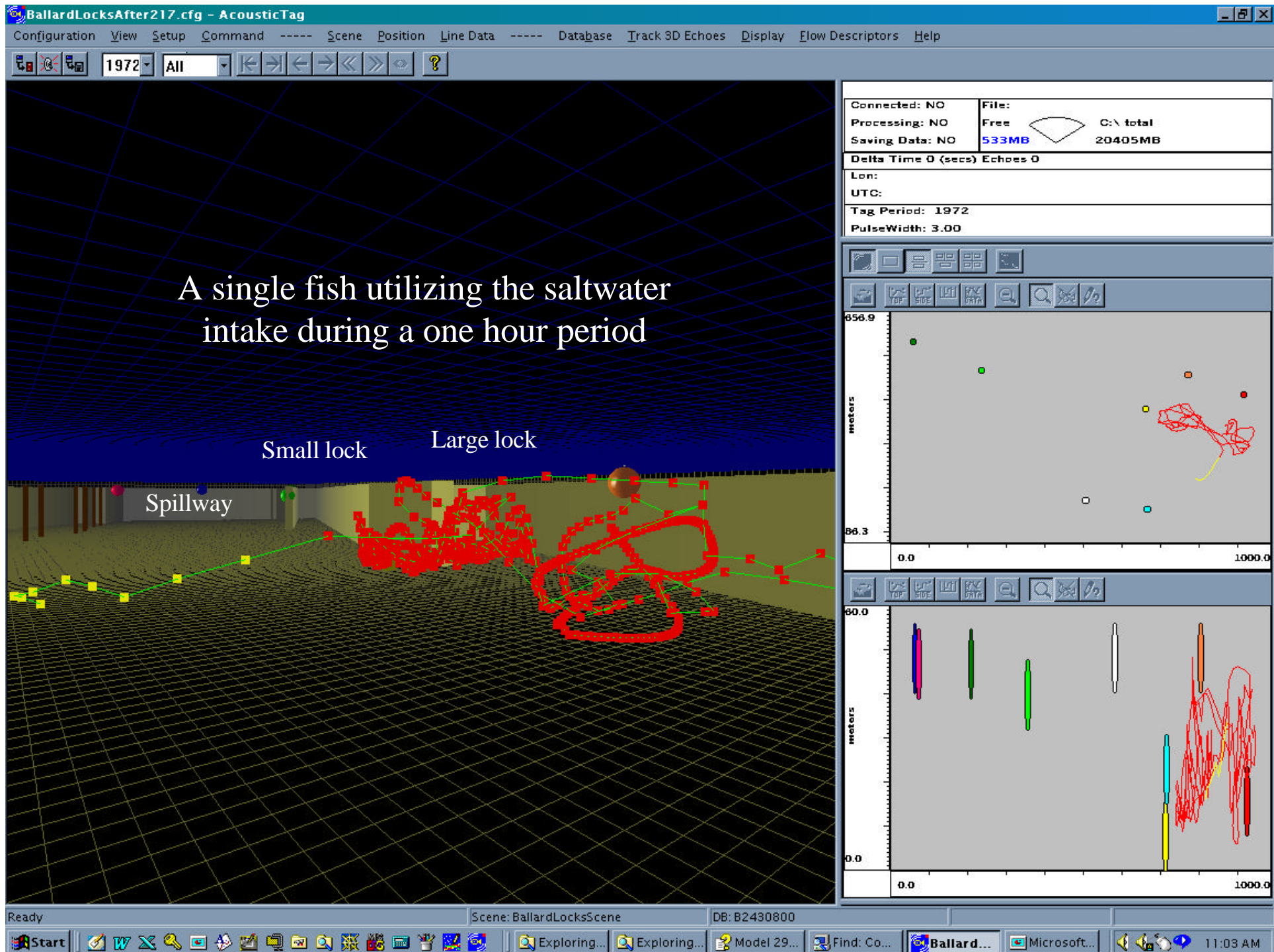
Vemco Tag

HTI Acoustic Tag

Methods

1. Nine hydrophones deployed, with focused coverage on the saltwater drain intake
2. Forty-five fish released with Acoustic Tags
3. Tracked fish for 2 months (July 25- October 02)



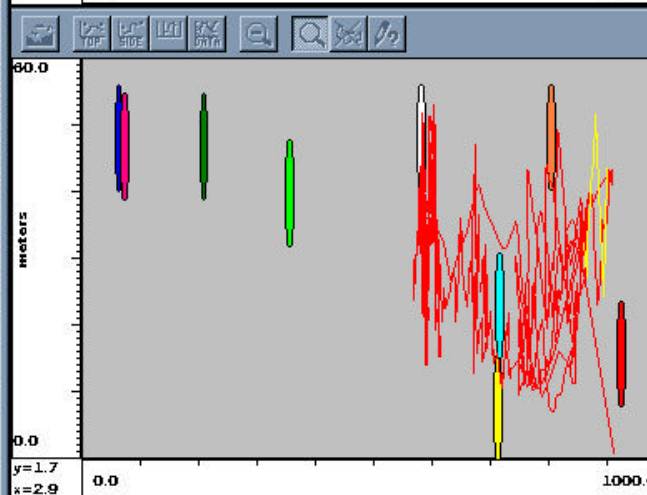
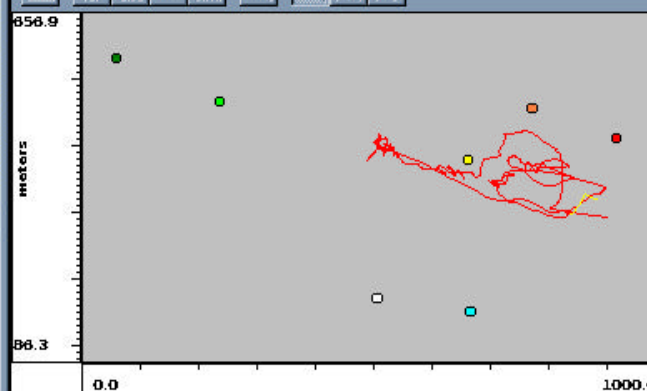


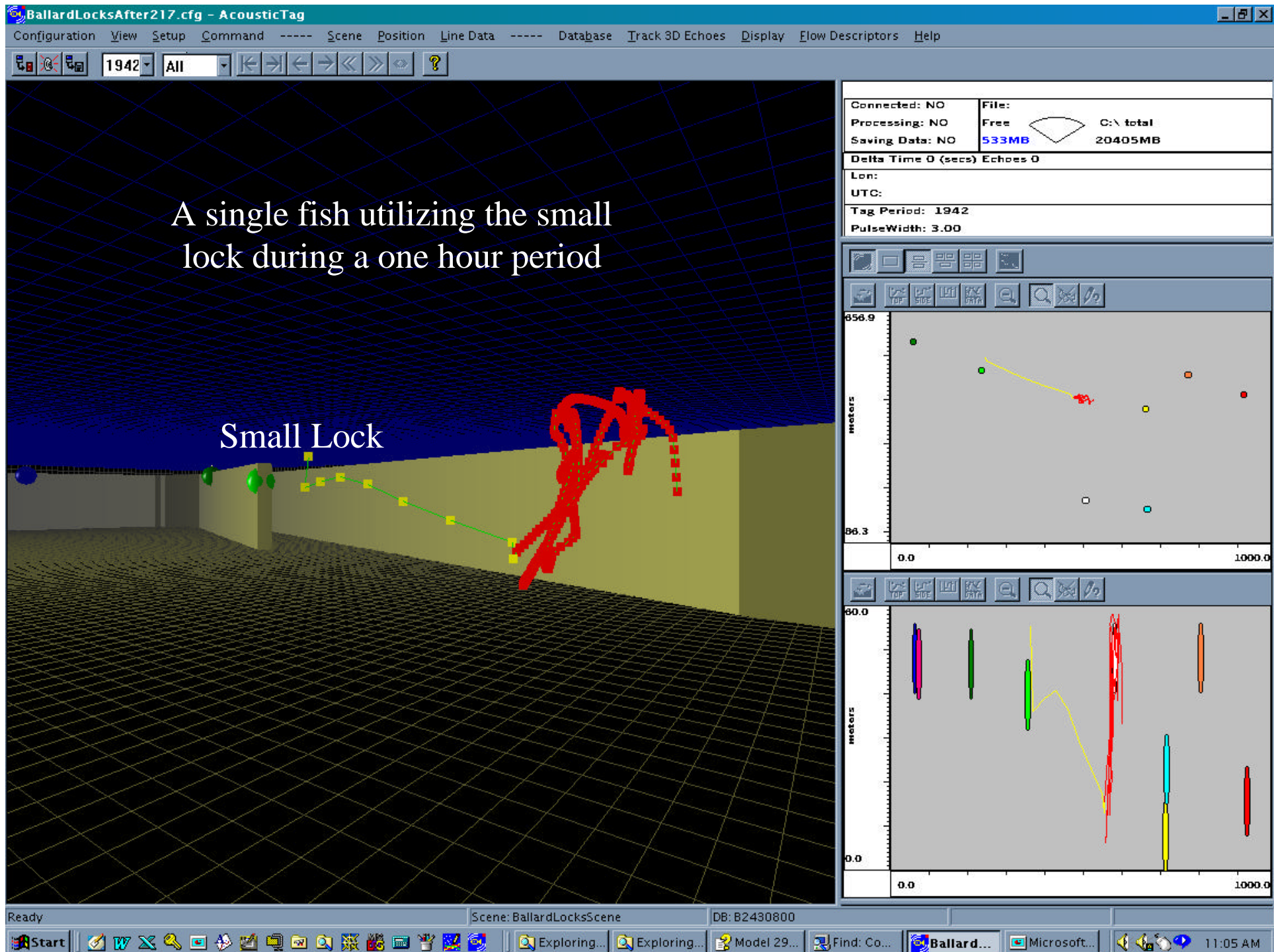
A single fish utilizing the small lock, large lock, and intake during a one hour period

Small lock

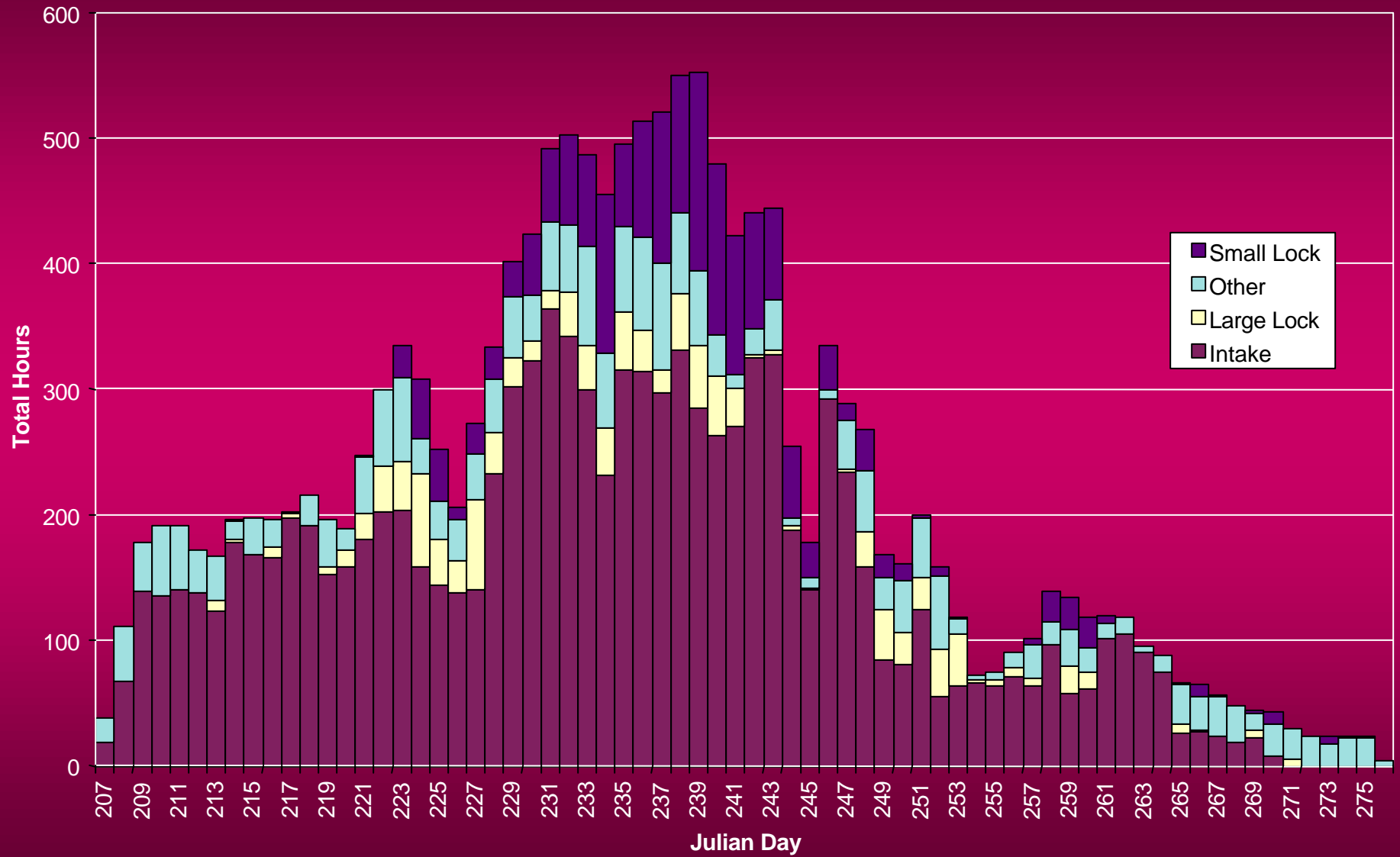
Large lock

Connected: NO	File:
Processing: NO	Free  C:\ total
Saving Data: NO	533MB 20405MB
Delta Time 0 (secs) Echoes 0	
Lon:	
UTC:	
Tag Period: 1940	
PulseWidth: 3.00	

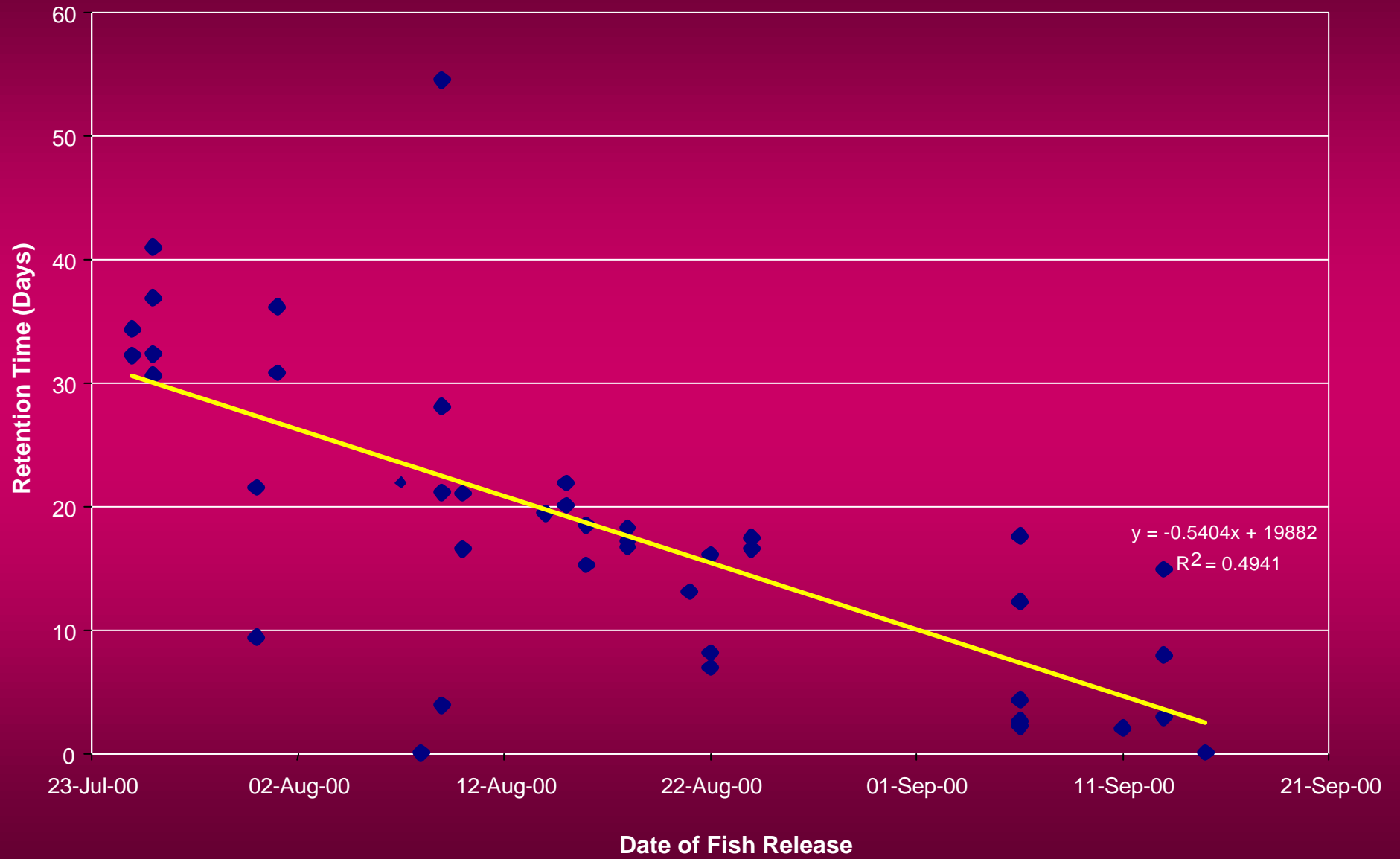




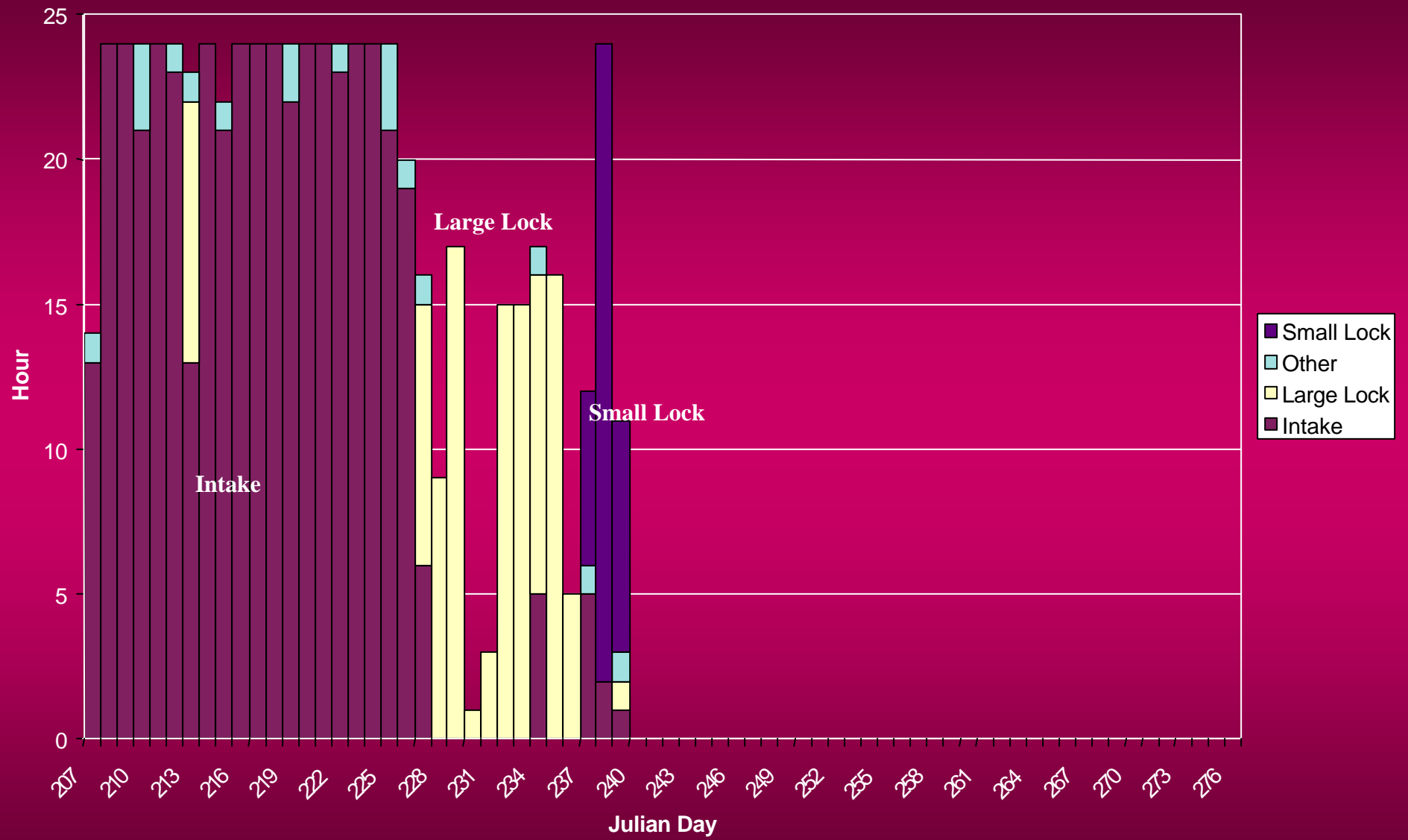
Location of all Fish Over the Entire Study



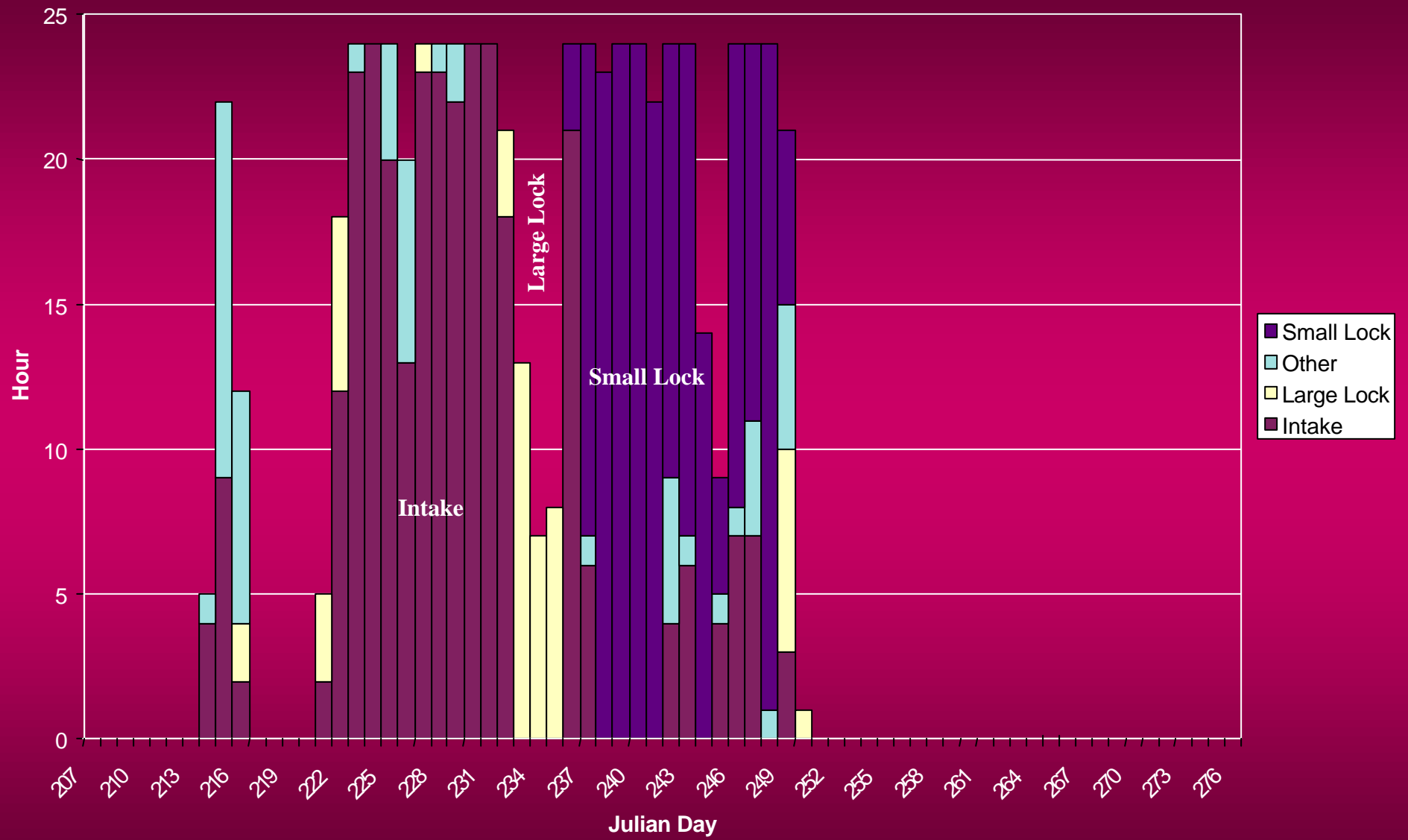
Ballard 2000: Retention Time



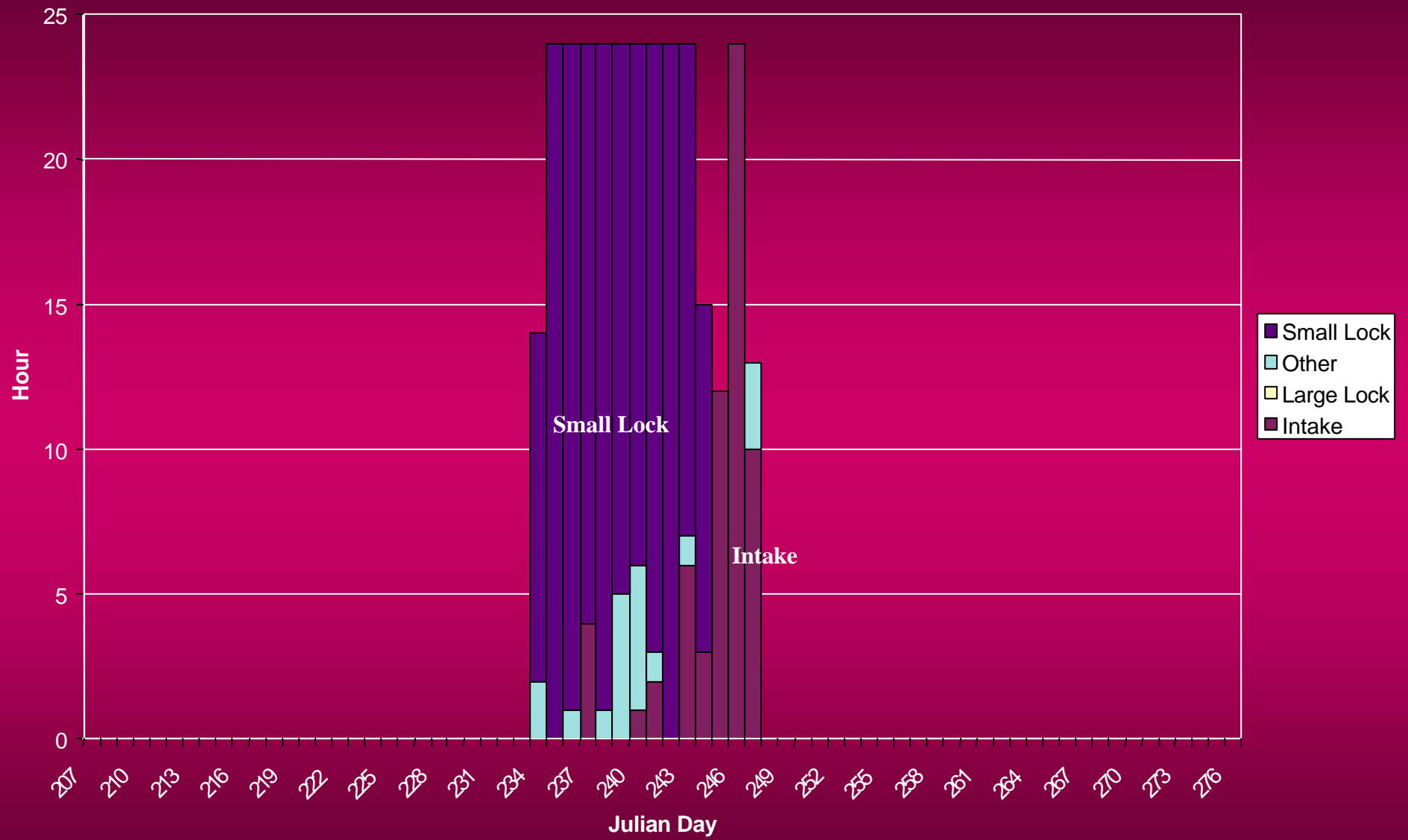
Fish 2000



Fish 1977



Fish 1930



Preliminary Findings

1. It is feasible to use an Acoustic Tag system to track adult Chinook at the Ballard Locks.
2. Chinook retention rate decreases as the season progresses
3. Chinook primarily utilize the saltwater intake as a refuge.
4. Chinook also utilize the small and large locks.
5. Chinook frequently move between the intake, large lock and small lock.

Hiram M. Chittenden Locks

